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WESTERN STATES MINERALS CORPORATION



FAX to Susan
Copy FAX to Net/015/002 #2
copy Pam Lowell

FAX TRANSMITTAL SHEET

DATE: 6 13 1994

ATTENTION: PAMELA GRUBAUGH-LITIG / LOWELL BRAXTON

COMPANY: _____

FAX #: (801) 359-3940

FROM: BUZZ GERICK

OF PAGES: 3/0 (Includes this cover sheet).

MESSAGE: Pam / Lowell - Pls. pass this on to Susan White, so that she may be able to visit the site and participate in the survey.

As ever,

BUZZ
PROPOSED SAMPLING PROTOCOL INCLUDED



Certified Mail
Return Receipt Requested

June 2, 1994

Ms. Pamela Grubaugh-Littig
Permit Supervisor
State of Utah
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

RE; MODIFICATIONS TO THE J.B. KING MINE RECLAMATION PLAN
REVISION (SUBMITTED FEBRUARY 18, 1994), WESTERN STATES
MINERALS CORPORATION, J.B. KING MINE, ACT/015/002, FOLDER
#2, EMERY CO., UTAH - AND PROPOSED SAMPLING PROTOCOL FOR
SUMMER 1994

Dear Ms. Grubaugh-Littig:

Please find attached the following two (2) documents:

1. Modifications to the J.B. King Mine Reclamation Plan Revision, dated February 18, 1994. This includes seven (7) replacement pages to address issues from the Division's letter of April 14, 1994 (and specifically to Susan White's letter of March 10, 1994) regarding terminology related to stability, surface preparation, and standards on the reconfigured portions of the site.
2. This second document outlines the proposed sampling protocol that will be utilized this summer to sample vegetation patterns in relation to topography and other regional and site specific factors. This should be forwarded to Susan White.

Ms. Grubaugh-Littig
June 2, 1994
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Field vegetation sampling will commence the week of June 6, 1994. Of course, Division staff are welcome to participate in this activity. Dr. Sam Bamberg will be directing this program.

As other information becomes available, I will continue to forward it to your attention. If you have any questions, please call me at your earliest convenience.

Sincerely,



E.M. (Buzz) Gerick

cc: Lowell Braxton (UDOGM)
Larry Berg
Sam Bamberg

**PROPOSED SAMPLING PROTOCOL
AT THE J.B. KING MINE SITE
EMERY COUNTY, UTAH**

SUMMER 1994

Submitted to:
**WESTERN STATES MINERALS CORPORATION
205 S. Rock Blvd., Suite 130
Reno, Nevada 89502**

Prepared by:
**SAMUEL A. BAMBERG, Ph.D.
and
INGRID E. HANNE, M.S.**

**Bamberg Associates
26050 E. Jamison Circle
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May 1994

1.0 Introduction

This sampling protocol has been developed for the sampling vegetation patterns in relationship to topographic, soils, and erosional factors. The present reference area does not address the pattern of vegetation and size allowance for bare versus vegetated areas. The topography and soils on the reclaimed site are complex and disturbed, and the vegetation established is in a successional status and not uniform. We are proposing to conduct a specific type of sampling for determining the relationship of vegetation patterns to soils and topography on undisturbed natural areas in the vicinity of the mine site. The purpose of this sampling is to determine the natural patterns of vegetation in this specific region of Utah as a guide to conditions to be expected on the reclaimed site. These types of field analysis are not a part of ordinary procedures covered in the Division's guidelines.

The method proposed uses linear coupled transects. These are linear plots (typically 2 x 10 meters in size) laid end to end along a straight compass line and oriented parallel to the gradient. The general areas to be surveyed will be the westerly facing escarpments and slopes of Dog Valley. Vegetative, topographic, erosional, and soil parameters will be recorded in each plot. The transects will be analyzed for the type of vegetation and size of bare areas as they relate to topography, soils, and erosional features.

These procedures may change somewhat as the field program is started and field tested. All changes to these procedures will be documented, and an explanation and rationale for the change included in the report produced. A general field reconnaissance will be conducted in the vicinity of the reclaimed mine to observe and record topographic, drainage conditions, and other environmental factors. The downslope and drainage features in the basin in which the reclaimed mine is located will be characterized and photographed.

2.0 Specific Procedures

The procedures are detailed in this section for the parameters to be measured, the sampling locations and marking, number of samples, and analysis of the data.

Sampling location and marking: Two sets of sampling will be conducted; one off site, and the other on site. The off site linear transects will be run north and south from numbered perimeter fence posts chosen randomly. The transects will be run from these random points on the north edge of the site in a northerly direction (specific azimuth) along gradients at the same elevation as the site. This may be repeated running south from the southern edge of the site if more samples are required. The general areas to be surveyed will be the westerly facing escarpments and slopes of Dog Valley. Transects will be permanently marked with 3' lengths of #3 rebar driven 2.5' into the ground at every 30 meters. A 30 meter steel tape will be stretched between markers. Similar linear transects will be measured on the reclaimed site using the same systematic random location method. An attempt will be made to have approximately the same number of samples on and off site.

Parameters: The parameters in the transects to be measured for vegetation are: percent cover by species, numbers of shrubs by species, and length of the center line that is vegetated. Topographic features recorded will be slope and aspect; soils and surface features will be types of substrate and percentage rock; and erosion features will be depths and width of drainages (gullies and rills), and amounts of aggradation and degradation (erosional status) of surfaces.

Specific field forms have been developed which will be used during the field measurements. This form will be transferred to computer spreadsheets for general analysis and statistical tests. A sample of the form is attached to this protocol which details the field measurement for each parameter. The following are the measurements for each parameter that will be measured in the

field:

PARAMETER	FIELD MEASUREMENTS
Vegetation	species cover
	total cover
	shrub density
	length of center line that is vegetated (1% cover or more)
Topography	percent slope
	aspect
Soil type	a descriptive term that will be developed in the field by inspection
Substrate type	a descriptive term to be developed
Rock	type
	percent cover
Moisture	a scaler of 1 (moist) to 5 (dry)
Erosion	a scaler of 1 (severe erosion) to 5 (obvious deposition)

Number of samples: The number of samples will depend on the heterogeneity of the linear plots being surveyed. Sample adequacy for the number of factors being measured is not of concern, but a large number of samples is required for multiple regression analysis. At the present time, the number of samples planned is 200 of the linear plots on 2 or 3 lines off site, and 100 to 150 plots on site.

Analysis: The results of the transects will be analyzed for: (1) the vegetative types, percentage cover, and sizes of area with low vegetative cover; (2) the percentage and types of topographic slopes; (3) the percentage and types of soil; and (4) types and amounts of erosional features. The parameters will be developed using statistical means and standard deviations. The correlation coefficients between these four sets of parameters will be determined using multiple regression analysis.

These results will then be applied to conditions on the site with similar parameters. The variable on site will be compared to the similar variable off site using the t distribution, or a comparable non-parametric statistical test, if appropriate. The results of the analysis will be applied as criteria for the allowable size and percentage of areas with low vegetative cover as related to topography and soils. The statistical analysis may be further developed after the field work this summer.

3.0 Reporting

The results of the field sampling procedures will be documented in a report. The report will include all methods used and any modifications necessitated by field sampling or statistical analysis. The recommendations will include any modifications to the planned revised reclamation (J.B. King Mine, Reclamation Plan Revision, February 1994) on the site this fall.